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Mixed Media: Working with Audio and Visual Materials—

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Mysteries of Magnetic Tape Revealed at MAC Fall Symposium

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What do the terms "azimuth," "control track," and "sticky shed" all have in common?[1] If you answered "magnetic tape," take yourself out for a nice meal. You probably already know more about that staple of audiovisual media than most archivists. To the rest of us, magnetic tape is but a bundle of mysteries.

Confronting those mysteries was the purpose of MAC's 5th annual Fall Symposium, a short but intense examination of the world of magnetic tape. From science to storage, machines to migration, the Fall Symposium took attendees on a fast-paced journey through what was, for many, an uncharted territory. Our guides through this tangle were Elizabeth Clemens, audiovisual archivist at Wayne State University in Detroit, and George Blood of George Blood Audio and Video in Philadelphia (formerly Safe Sound Archive)—she to provide an archivist's view, and he, that of an engineer and vendor.

It would be folly to attempt to summarize the full Symposium here in a mere 1,500 words, but there were three major issues that stood out to this writer. Herewith is a digest of those main points.

Threats: What Can Possibly Go Wrong?

A lot, as it turns out. After an enlightening look at the structure and workings of magnetic tape, we learned about its vulnerabilities. First and foremost is the rampant obsolescence associated with these unique documents. Unlike most archival materials, audiovisuals in general are machine-dependent, requiring machines to create them and mechanical intervention to access them. However, evolving formats—especially of magnetic tape—have outpaced most archives' ability to keep up. This format obsolescence, some experts contend, is the greatest threat to our magnetic tape heritage.

Further threats include chemical assaults, like the mix of the tape's chemistry with high humidity, which results in sticky shed syndrome and vinegar syndrome.[2] Biological threats include mold, mildew, and fungus, which can each compromise tape surfaces and edges. Finally, mechanical threats arise from damaged housings, misadjusted or dirty playback machines, and strong magnetic fields. The first two of these are tied primarily to poor storage conditions that harbor temperature and humidity fluctuations, particularly high humidity.

Most importantly, the instructors imbued us with a respect for the fragility of magnetic tape, and the fact that, more than any other type of document, its lifespan is on a collision course with time.

Preservation: Save That Tape! (If You Can)

If the above-mentioned are the major threats, then the defenses are obvious: make sure that all your tapes are in good condition, provide a stable storage environment for them, and have access to a parade of machines of every format in good working order. There's just one problem: reality. There is no such archives. Nevertheless, we need not sit idly by and merely witness the demise of our tapes. There are ways to hedge our bets against time.

It's all about selection and priorities: discerning what has both the most compelling reason and the least chance to survive. Toward this end, we learned the value of labeling and documentation, some simple ways to examine tapes for problems, proper storage and handling, and how to estimate the longevity of certain formats by their production histories.

Most significantly, we were introduced to assessment surveys, on-line tools that can not only create a profile of the repository's holdings but also help the archivist set priorities for preservation. A few of these have cropped up in the recent past,[3] but the instructors focused on one newly-launched tool called the "Audiovisual Self-Assessment Program" (AvSAP), a work of the University of Illinois at Urbana-Champaign (see http://www.library.illinois.edu/prescons/projgrants/grants/avsap). AvSAP is designed to collect data about audiovisual holdings and their condition, helping archivists to create a plan for the prioritized preservation of audiovisual materials—including, of course, magnetic media. It also provides guidance for staffers on "extending the lives of their collections with the resources at hand."[4] With such tools at the archivist's disposal, we've got time on the run.

All of which segues nicely into the third issue. . .

Duplication: Every Season Is Migration Season

Not so long ago (a relative few years), the standard practice for duplication was to migrate existing media to the latest and most robust analog magnetic tape format available; the thinking being that analog was more stable than digital tape. Format obsolescence changed all that, as it became clear that analog media would soon become extinct. It was at that time that migration to digital media was embraced. Now, it is the norm.

But what format? What media? What process? The instructors admitted that no real standards exist, but many best practices do. Learn the potential scale of your project by taking into account the needs of your institution and the level of support it can provide, but also be willing to listen to vendors, who are most often happy and willing to work with you to determine the best scenario for your project. The Symposium instructors presented a detailed item-by-item representation of the client-vendor relationship, the principal lesson being the importance of thoughtful and frequent communication.

The instructors extolled the strong connection between duplication and preservation. While there are other reasons to digitize (such as patron requests), the primary motivation is to preserve the content of a recording before it succumbs to the ravages of obsolescence, degradation, and time.

Resources: We Are Not Alone . . .

. . . and thankfully so. This is not really an issue as much as a resource. Included in our instruction were repeated references to organizations and Web sites that are exploring and meeting the challenges of magnetic media head-on. A few of the most useful are the following:

The Association for Recorded Sound Collections (http://www.arsc-audio.org)

The Association of Moving Image Archivists (http://www.amianet.org)

Audio and Video Carriers (http://www.tape-online.net/docs/audio_and_video_carriers.pdf)

The Care and Handling of Recorded Sound Materials (http://www.cool.conservation-us.org/byauth/st-laurent/care.html)

Magnetic Tape Storage and Handling: A Guide for Libraries and Archives (http://www.clir.org/pubs/reports/pub54)

Videotape Identification and Assessment Guide (http://www.arts.state.tx.us/video/pdf/video.pdf)

Videotape Preservation Handbook (http://www.amianet.org/resources/guides/WheelerVideo.pdf)

Other issues regarding magnetic tape were covered, such as copyright, collection, funding, and research use practices. But alas, space does not permit this writer to expound further.

Magnetic media contains *the* audiovisual record of the late twentieth and early twenty-first centuries. We should do all we can to preserve its content, and that begins with education. The MAC Symposium, *Mysteries of Magnetic Tape Revealed*, put us on the road to that understanding. Illumination: priceless!

Notes

1. These three terms are defined thus: (1) "Azimuth" is the angle between the magnetic tape and the tape head(s) in an audio or video machine; (2) A "control track" runs along the edge of standard analog videotape that defines the individual frames of the tape to determine proper playback speed; and (3) "Sticky shed syndrome," or "binder hydrolysis," occurs when a magnetic tape's binder has deteriorated to the point that it sheds on playback, leaving gummy deposits on the tape path guides and heads of an audio or video machine.
2. "Vinegar syndrome" is a chemical reaction caused by the mixture of moisture (humidity) and the acetate plastic used for many films and audiotapes. This causes a deterioration of the acetate base and is characterized by a vinegar smell.
3. Other survey tools include Columbia University Libraries' *Survey Instrument for Audio & Moving Image Collections*, http://library.columbia.edu/services/preservation/audiosurvey.html; Indiana University and Harvard University's *Field Audio Collection Evaluation Tool* (FACET), http://www.dlib.indiana.edu/projects/sounddirections/facet/index.shtml; and New York University's *Visual & Playback Inspection Ratings System* (ViPIRS), http://library.nyu.edu/preservation/movingimage/vipirshome.html.
4. "The University of Illinois Library Launches Audiovisual Self-Assessment Program," University Library, University of Illinois at Urbana-Champaign, 12 August 2010, http://www.library.illinois.edu/prescons/projgrants/grants/avsap/AvSAP_Promotionalmaterials.html, (5 November 2011).